

ESPC WORKSHOP

21-23 March 2012

NOAA Science Center, Silver Spring, MD

WORKSHOP GOALS

- To achieve a better understanding of ESPC objectives and activities,
- To identify overlap and/or potential collaboration with USGCRP activities,
- To validate and develop more detail for the five proposed ESPC demonstration projects, and,
- To establish science working groups for these demonstration projects.

History

- Navy/NOAA/DOE initial meetings to discuss collaboration
- ESPC meeting in Boulder – discussion of science and interest
- ISSG meeting Fall, 2011 discussed feasibility and options. Proposed infrastructure and demonstration objectives.
- ESG meeting in October, 2011 approved concept with addition of near-term deliverable (2018) and new demo titles.
- ESG meeting in January, 2012 approved revised titles to demonstrations, agreed to proceed.

Demonstration Goals

Demonstrate using latest available technology:

- The feasibility of a coupled earth system prediction system
- The value of a coupled earth system prediction system to meet real world user needs and further our environmental predictive capability
- Reveal critical path science and technical issues
- Establish a common framework for participation
- Aid in design of recapitalization
- Bound resources required for operation
- Reveal operational infrastructure requirements

Create a software environment that fosters a National contribution to the advancement of the science of earth system prediction

Establish an environment to accelerate science and technology



Demonstration Framework

Common modeling environment agreements

Requires merging of NUOPC/ESMF and other architectures

Community model repository

Common data sets & test cases

Multi-year atmosphere, ocean, ice, land, space data/analyses

Common code, scripting

Data storage

Diagnostics

Verification & validation

Code and data security, version control, access control

Support services

User support for data, scripts and code

Coordinated computational services



Proposed Demonstrations

Prediction of weekly to monthly episodic weather extremes

Prediction of stationary planetary waves and wave transitions on time scales of a week to six weeks leading to reliable prediction of extreme heat waves, flooding, and drought based on planetary teleconnections and coupling of ocean, land, ice and space.

Seasonal prediction of tropical cyclone threat

Improved seasonal predictions of tropical cyclone activity, number of storms, major storms and genesis by basin and region of basin based on improved ENSO/MJO prediction

Hypoxia and algal bloom prediction

Prediction of monthly to seasonal river runoff leading to prediction of hypoxia and algal blooms from improved prediction precipitation extremes based on planetary waves and MJO/ENSO skill

Decadal Arctic sea ice extent and ice free dates

Prediction of annual to decadal sea ice extent and ice free dates based on coupling of ocean and atmosphere with improved ice models

Decadal climate variation

Improved prediction of the Atlantic Meridional Overturning Circulation as a driver for decadal climate variability

